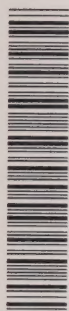


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Memorandum Respecting Cold Storage
and the Utility of Collecting Stations



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Ontario.

MEMORANDUM

RESPECTING

COLD STORAGE

AND THE

UTILITY OF COLLECTING STATIONS.

PRINTED BY ORDER OF THE
LEGISLATIVE ASSEMBLY OF ONTARIO.



TORONTO :
WARWICK BRO'S & RUTTER, PRINTERS.
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COLD STORAGE.

MACHINERY OF TRANSPORTATION.

The common roads of the country form an important part of the machinery of transportation. Without a proper means of transportation it is impossible to develop the resources of the country. The more perfect the transportation equipment, consistent with requirements, the more cheaply the commodities can be handled and the business transacted, and the greater will be the returns to the producers of all that goes to make the means of transportation necessary. The laws of supply and demand, the development of commerce, make the system of transportation in any country very extensive. But with Canada, distinctly productive, with an immense amount of surplus products which must be disposed of in foreign markets, with distances so very great on land and water, this transportation system is particularly extensive and complicated, requiring, possibly, more thought and attention than any other branch of our public service. Common roads must be made, railways built, canals opened, and lines of ocean steamers established. So that no one branch of this work can be taken up without involving, or necessarily leading one to the consideration of the whole question.

Our railway system, especially in the Province of Ontario, is nearly perfect. Canals have been opened which are now being enlarged and extended to meet the growing demands, and steamboat lines have been established. However, while all these may be perfect in their construction and operation, it is not sufficient. It is not enough to provide capacity, power and implements for carrying the products, but it is essential that provision shall be made for preserving and conveying with the least possible injury, all perishable commodities. With a view to this, carrying companies are providing cold storage compartments in steamers, and refrigerator cars, by which these perishable goods are kept in perfect condition throughout the journey.

In the case of dead meats, the live animals are collected in large quantities at central points, of which Chicago is one of the chief, are slaughtered and shipped in a chilled condition direct to the market, cold storage being provided at both American and English termini, and throughout the journey. Little attention has been given to other perishable farm produce, and but little provision has been made by the transportation companies for its safe carriage, for the reason that so little effort has been made to collect this stuff in sufficient quantities at points on the railway system. At a few central points cold stores are being erected by private enterprise. But this, at best, can only be a partial system and will serve but the immediate vicinity.

FARMING RESTRICTED FOR LACK OF MARKET.

Near the large centres and within a radius of ten or twelve miles, farm lands are exceedingly valuable owing to their close proximity to a constant market for all produce. But outside the limit of daily accessibility to such markets, agriculture is restricted to a certain class of farming which will produce large quantities of imperishable stuff such as

can be delivered periodically and in bulk. With richness of the soil, and perfection of the climate, the Province of Ontario is a garden capable of yielding an abundance of roots, vegetables, fruits, poultry, eggs, butter, and nearly all the staple articles of domestic consumption. Our farmers are being educated in respect to all these by the Agricultural College, Farmers' Institutes, Dairy, Fruit Growers' and other institutions of the Government, so as to enable them to produce in the best possible manner, all these commodities. But it is unfortunate that this rich soil is not devoted to the raising of produce which, if properly handled, would return many times what can be now obtained from it under the most favorable management.

The farmers have no reason now to complain of their condition or the prices paid for their produce, as no country in the world has made more rapid strides, and nowhere can farmers more prosperous be found than in Ontario. But with these possibilities, and with markets ready for our produce, it is expedient for us to employ every means of improving our condition and advancing the welfare of the country.

COLD STORAGE IN AUSTRALIA AND NEW ZEALAND.

What can be accomplished by cold storage is indicated by the experience of Australia, where, prior to 1880, sheep had become so numerous that the colonists did not know what to do with them. They were being bred in thousands for their skins and tallow only. The very finest mutton was not worth putting on the market and was converted into manure for the land.

In 1880, however, 400 frozen carcasses of sheep were imported into England. The following year, so successful was the experiment, 17,275 were imported. This number has constantly increased until in 1897 from Australia alone there were imported 1,394,500 carcasses. In addition to Australia, New Zealand and Argentina copied the Australian pioneers in refrigeration, the former country, in 1897, sending to England 2,696,000 carcasses, and the latter 2,680,000. To this must be added 758,000 cwt. of frozen beef sent to England by these countries.

So successful has the industry proven with mutton and beef, that poultry, game and fruit have been added to the list of perishable exports from these colonies, which prior to the advent of cold storage were useless products. Four years ago rabbits, which had increased in such numbers as to be a thorough pest to the Australian sheep-raiser, were shipped in a frozen state to England, and this has developed a new industry for the country. Rabbit meat exported in 1897 amounted to 131,280 cwt. Fresh salmon are now being sent from British Columbia and are thereby enabled to enter into competition with the fresh salmon caught in the English, Scotch and Irish waters, while a special consignment of New Zealand trout recently arrived in England in splendid condition.

In Australia there are seventeen freezing works, while in New Zealand there are twenty-two, capable of freezing about 7,000,000 of sheep between them annually. The cost of getting the sheep slaughtered, frozen and placed on board ship is scarcely a half-penny a pound. There are now engaged in carrying frozen and "chilled" produce to England from foreign countries over 150 steamers having special refrigerating machinery and cold rooms for dealing with the trade, while others are being fitted up. Ten years ago a boat carrying 30,000 carcasses was the largest, while to-day they are being built to carry 100,000 carcasses per voyage.

IN ENGLAND.

So important has this trade become to England that there are now stores in London, England, capable of receiving over a million and a quarter of 56 lb. carcasses. There are stores in Birmingham, Bristol, Manchester, Glasgow, and other large towns, having a very large total capacity, while in several smaller towns the municipalities are proposing to erect stores, and individual traders are going into the business.

Such is the benefit received from cold storage, that it is predicted by well known English writers that ere long every town in the British Isles will have its cold store for the reception of frozen meat, dairy produce, chilled fruit, vegetables and other perishable but preservable stuffs.

COLLECTING STATIONS IN ONTARIO.

The prime object of a system of cold storage should be the collecting and preserving of perishable produce. The work of forwarding this stuff to the foreign market could safely be left in the hands of private enterprise, and these collecting stations would form the base from which the shippers would draw their supply. Private companies now engaged in the business at central points would be largely assisted by the certainty of a continuous supply ready on immediate notice to fill their orders. Such purchasers, however, need not be relied upon because, by the co-operation of several collecting stations, shipments could be made direct to the foreign market. This plan, however, is not found necessary in the case of cheese factories, where the local markets at central points, by open bidding and keen competition, give entire satisfaction.

Only the best and most sound produce, especially in the line of fruits, can be shipped to the English and other foreign markets. Collecting stations throughout the country would afford splendid opportunities for gathering into central private cold stores a large supply of produce where it could be sorted, as is now done with apples, the best sent forward in cold storage to England, the poorer qualities disposed of for manufacturing purposes. At the present time, while there are many merchants who would be glad to undertake such a trade, they find it impossible to obtain the necessary produce in right condition for shipment, a lack which a general system of cold storage collecting stations would supply.

AN EXTENDED SEASON AND INCREASED CONSUMPTION.

It must not be inferred that cold storage is to be advocated simply as a means of improving the export trade. While it will add very largely to our resources in that way, yet the added advantages with regard to local consumption are almost as great. The difficulty which farmers and producers find in disposing of their perishable fruits arises from the fact that the season during which it ripens and has to be harvested and sold is short, and the market forced and glutted. Cold storage, in effect, will extend the season of purely local consumption. The season of small fruits could, in the majority of cases, be doubled. Much of the fruit that is now almost completely off the market by the middle of October could be placed on the table of the consumer up to Christmas. The benefits accruing from such an extended period of consumption are evidently enormous, and would add immensely to the income of the farming community. Not only could a much greater supply of these perishable stuffs be raised and marketed, but the prices obtainable, in view of the fact that the market could be supplied without the present strong temptation to glut, would be more steady and remunerative to the farmer.

WILL ENCOURAGE A LARGE SURPLUS.

As a rule the farmer does not aim at raising a larger amount of these small stuffs than will supply his own table. But notwithstanding this, there is a large surplus which when traded or sold, even at his own prices, to the family merchant, supplies the farmer with a great many small articles, and at the end of the year amounts to considerable. And, while the individual farmer may not place a high estimate on the value of these small stuffs, yet the aggregate value in a community is surprisingly great.

Cold storage is not for the purpose alone of providing for the disposition of the present amount of small stuffs grown by the farmer. Under present conditions his experience with this comparatively small surplus is only such as to convince him that it has to be almost given away. It is not for this surplus only that cold storage is needed, but it is for the very large surplus which the farmer would be encouraged to raise under profitable conditions brought about by cold storage.

WILL LESSEN THE DIFFICULTIES OF MARKETING.

The present difficulties, too, in disposing of those stuffs are such as to discourage many from entering upon their production. When raised solely for the local market, the farmer expects to go to town and stand around in the cold until a purchaser appears.

At all times there is a possibility that he is taking his stuffs to the market at the time of a great rush, and that towards the end of the day he may be forced to practically give his produce away. This is by no means an uncommon experience with all farmers who dispose of their stuffs at the local market. If, on the other hand, by means of cold storage, the producer was assured of a constant and reliable market for his poultry, vegetables and small fruits, it would be a much more attractive department of farming.

ADVANTAGES OF STORAGE.

A revolution has been created in Ontario farming, within the last few years, by the great extension of wheat-producing areas. Upon this crop, at one time, entire reliance could be placed, but with the opening up of the Canadian North-West and the increased production in the United States, South America, India and Russia, such has ceased to be the case. Foreseeing the effect of this, in order to make farming remunerative, the Ontario Government, through their Farmers' Institutes, and other organizations, turned the attention of agriculturists very largely to the raising of live stock, cheese and butter-making with most profitable results to the country; but the possible alternatives have been exceedingly few. Wheat still holds its place to a certain extent, for the reason that it is imperishable. It can be stored for any length of time and favorable prices awaited.

Let us suppose for an instant that, on the other hand, wheat were a perishable crop, that it had to be hurried to the market as soon as harvested, sold and consumed while the markets were glutted. It is apparent that its value to the farmer would very largely decrease. It becomes evident that, if by any means we can convert into imperishable products much of the stuffs now raised by the farmer for immediate and local consumption, the opportunities of farming would be vastly increased. If, for example, harvest apples could be stored for an indefinite length of time and disposed of as the market demands, a valuable source of income would be opened up for the farmer. The same would be the case with peaches, tomatoes, plums, pears, and other fruits which now have to be hurriedly disposed of or else wholly lost. Much would be gained by increasing the storage possibilities of butter, eggs, poultry, many vegetables and small stuffs, which now are sold for anything they will bring at the time they are offered.

CO-OPERATIVE STORAGE AND SALE.

Out of this grow a few of the advantages to be gained by a system of cold storage. If, at convenient points, and operated as many of the cheese factories are, on a co-operative plan, cold stores were placed, in which the producers could store their stuffs for a sufficient length of time to avoid the glutting of the markets, it is evident that the profits to be derived from this produce would, in many cases, be largely increased, and that by this system of storing and preserving, a new market would be practically created convenient to every farmer, and an opportunity provided for developing this most important branch of the farming industry. As with the live stock and dairying industries, in which breeding, feeding and all details have been closely studied, a better quality will be provided by the farmer, a greater demand thereby created, and more profitable returns secured.

COLD STORAGE AS A PRIVATE INVESTMENT.

Cold stores are at present being established in several of the central points, such as St. Catharines, London and Harrison, which will draw their support from a considerable extent of country. They are, however, private enterprises independent of the farmer. Those who are investing their money in these concerns see the great difference in prices to be had by buying from the farmer when the market is forced and glutted, storing it and selling at a later time when the price has again advanced. Their object is by no means to benefit the farmer, but is solely to secure profits for themselves. They propose only to pay the farmer the least possible amount the state of the market and produce will force him to accept, and they will reap the profits in a few weeks, perhaps in a few days, when prices have gone up again.

It is not to be desired that middlemen should be shut out from any reasonable field. But it is very much to be desired that the farming community shall reserve as much as possible for themselves the profits accruing from their labor. It is for the farmer himself to take advantage of cold storage and handle the stuffs in accordance with the state of market, in the same manner as he does his wheat. But private enterprise will not, for some time to come, carry these collecting stations to the more isolated farm, to the less thickly settled communities, where they are needed to bring prosperity to the farmer whose advantages and opportunities are few, in such a way as to attract population and build up the country.

COLD STORAGE AND THE FRUIT GROWERS' ASSOCIATION.

At the annual meeting of the Ontario Fruit Growers' Association at Kingston in December, 1896, the advisability of making some experimental shipments to Great Britain of tender fruits, such as peaches, tomatoes, pears, grapes and summer apples, was fully discussed. An address was given by the Hon. Sidney Fisher, Minister of Agriculture for the Dominion, to the effect that the Department of Agriculture was desirous of assisting Canadian fruit growers in this enterprise, and would like to know just what provision would be needed. A committee consisting of L. Wolverton, W. M. Orr, G. E. Fisher, A. H. Pettit and E. D. Smith was appointed to reply to this enquiry. This committee met and recommended that shipments go forward during the months of August, September, October or later, of at least one carload per week, and of three or four carloads per week during the month of September; that cold storage would be needed at the point of shipment, as well as on the railway cars; that the varieties of fruit be as many as possible, and packed in the very best manner; that only the best stock be allowed to go forward; that an agent be sent to Great Britain to look after the interests of the fruit grower; that cold storage warehouses be erected at such points as could be agreed upon, where growers would furnish the amount of fruit required, and agree to buy over the warehouses at the end of three years, provided the experiment proved a success.

At a meeting of representative fruit growers from Grimsby, Winona and Burlington, held at Grimsby on the 26th of January, 1897, two resolutions were passed, one asking for three warehouses, one at Winona, one at Burlington and one at Grimsby, each place to provide one third of a carload per week; and another resolution which, while approving of the former, recommended as a preferable scheme, the erection of one warehouse by the Department, and the guarantee to the shippers of a fair market price for the goods. The Department approved of the latter scheme, and decided to place one warehouse at Grimsby, provided growers there would agree to supply the necessary fruit to make up one carload a week and buy over the warehouse if the experiment after three years proved a success. Nine prominent growers of peaches, pears, grapes, tomatoes, etc., agreed to the scheme, and on the 7th of September the first shipment was made, consisting of Bartlett pears, Crawford peaches and grapes for Covent Garden, London, England.

EXPERIMENT OF THE DOMINION GOVERNMENT.

In 1897 the Department took charge of 7,141 packages of tender fruits and sent them to Great Britain. In 1898 the Department took charge of 3,815 packages of tender fruits. There was sent in 1897 about $3\frac{1}{2}$ times more than in 1898. The less quantity was the result of various causes, mainly climatic, the shippers in the Grimsby district were not able in 1898 to provide as much fruit as they expected, nor as the Department wanted to carry on its trial shipments. The arrangement with the shippers was that the Department would guarantee a certain price at the shipping point, and if there was a revenue above that, that also went to the shippers.

The kind of package used was comparatively small, measuring inside 22 inches by $11\frac{1}{4}$ by from 4 to 6 inches deep according to the size of the fruit. The packages were light; they were open for ventilation and for cooling the fruit; and they had an attractive appearance, and also the good quality of being reasonably cheap, costing about six cents a piece. They held all the way from 24 to 30 lbs. of fruit, according

to the size of the individual fruits. Each separate fruit was wrapped in tissue paper, and the packages were filled from the side so as to cause the least surface to be faced.

After the fruit was packed in the cases it was cooled down in the cold storage room at Grimsby to a temperature of between 36 degrees and 40 degrees Fahr. The cold storage could be easily held at these temperatures, and as the packages were small the fruit was cooled to the core to about 38 degrees Fahr. at the time it was put in the railway car. The railway company furnished refrigerator cars. They went forward to Montreal without loss of time, and the fruit was delivered on the steamships in very good condition, with the exception that quantities of the tomatoes and some of the peaches were considerably too ripe before they were put in cold storage at Grimsby.

PROF. ROBERTSON'S SUMMARY.

The reports of the export of fruit from the experiment station at Grimsby for the present year, which is the third season, are not yet published, but summarizing the results for the years '97 and '98, Prof. Robertson says :

"My conclusions, so far as they can be stated with any satisfaction to myself with some sense of the responsibility under which I say them, is that Canadians may have a continuously growing trade in the exportation of pears ; that there is a possibility of getting a trade that may leave a living profit from shipping tomatoes ; that there is no likelihood of making a success of sending over Crawford peaches ; and that the demand for Canadian grapes does not exist, and it is a question to be considered whether it would pay us to send about one carload a week of our best sorts to further try to create a demand or not."

MR. WELLINGTON'S SUMMARY.

More favorable, however, was the annual address of the President of the Fruit Growers' Association, Mr. W. E. Wellington, of Toronto :

"Still another important feature of our work, is the encouragement which has been given to the export of fruit in cold storage to Great Britain. Especially has this been beneficial to fruit growers in giving them practical knowledge as to the proper way in which to pack and prepare tender fruit for shipment in cold storage to Great Britain. Plans were formed by this Association, and submitted to the Minister of Agriculture, which have been carried out by him, and which are likely to prove of the most vital importance to the fruit growers of our country. Our own markets were beginning to be overstocked so that remunerative prices were no longer received for our produce, and our fruit growers were becoming discouraged, and were beginning to feel that they would have to give up the business.

"Now after two years of experiment, we have demonstrated clearly, that our pears can be exported to Great Britain, with the greatest success, and also bring to the grower the old prices which made fruit growing so profitable an industry in the past. Also that tender apples, such as Astrachans and Duchess, can be exported with success, and bring long prices in the British markets. Tomatoes also, with proper carriage, and if picked in a green state, can be safely exported, and will pay handsomely. I believe too, that in the near future, we shall find a profitable market for peaches, especially if varieties are grown that are not so soft as the early Crawfords."

"The experiments of two years have, on the whole, been attended with very gratifying results, and as we gain experience we shall soon be able, I feel certain, to land our best and even some of our most tender fruits in the British market, where prices will be realized that will be encouraging and profitable to our fruit growers."

THE DOMINION GOVERNMENT AND COLD STORAGE.

The Dominion Government, in addition to providing a cold store at Grimsby, bonused steamship companies to put refrigerator plants in their vessels and arranged with railways to provide refrigerator cars. There is also a government inspector at Montreal in charge of the fruit as it is being transferred from the car to the steamer.

FAILURES AND THEIR CAUSE.

The subject of cold storage is one to which the Ontario Fruit Growers' Association has devoted a great amount of discussion at their annual conventions, and they have become very conversant with its many advantages. There is some variance of opinion among them, however, as to the cause of failure in a number of instances, which they are inclined to attribute to the neglect of the steamship employees in keeping the fruit at a proper temperature during ocean transit. Prof. Robertson expresses the opinion that the fault may be with the fruit itself, and one which cannot be readily removed.

In the latter case, the explanation is that fruit which has been in cold storage decays with great rapidity on exposure to ordinary temperatures, particularly where the fruit has been picked after a certain stage of ripeness. The real difficulty may be either one or the other, but it is more likely that the cause is a combination of the two.

OF RECOGNIZED BENEFIT TO FRUIT GROWERS.

In fruit growing districts there can be little doubt, in view of experience to the present time, that a system of cold storage collecting stations would be popularly received. In addition to the export trade, all fruit, by means of cold storage, could be placed on the Canadian market in better condition, as it is of the greatest benefit to chill the fruit before placing on the cars. Unless chilled in this way, the cold storage provided by the transportation companies is not at all so efficient in preserving the fruit.

When once chilled it requires a much less supply of ice to maintain the fruit at a proper temperature to check the ripening process. When the fruit is placed warm on the cars, ice is rapidly wasted, and a sufficiently cool temperature is not easily obtained.

THE CANADIAN TRADE.

Cold storage would be of the greatest assistance in maintaining the Canadian trade. Even in Toronto much fruit is placed on the market in a condition which can mean but little profit to the growers. At present Winnipeg and other Northwest towns are supplied largely from the States. But little fruit can be grown in the Northwest, Manitoba or Northern Ontario, all of which promise increased consumption as population increases. These districts afford a market for all our fruits if they are offered in a condition which only cold storage can procure. British Columbia, while it will be a competitor with Ontario for the northwesterly markets, nevertheless offers a splendid market for grapes. Australia, too, is spoken of as an outlet for apples when once the cold storage facilities are complete.

APPLES.

The quality of winter apples as they reach England is much improved by cold storage. Many of them now reach England in a very unsatisfactory condition, whereas cold storage has more than doubled the price received. In the same shipment, part of which was shipped in cold storage and part in the ordinary way, the former realized 18s. per barrel and the latter only 8s. to the shipper.

For early harvest apples, such as the Duchess and Red Astrachan, it would open an entirely new market, as they cannot be sent to England at present except in cold storage.

The value of the apple crop to Ontario has not been estimated. It was stated, however, by Mr. W. E. Wellington, President of the Fruit Growers' Association in 1898, that there were 10,000,000 apple trees in the Province. Great Britain in 1898 imported from all sources, apples to the value of £1,108,056, of which £448,515 is attributed to Canada.

In addition to much increasing the quantity now sent from Ontario, the quality can be greatly improved, which would largely add to the value of this branch of the fruit industry. To chill the fruit for a few days before shipment materially aids in producing a better quality.

Much, too, which applies to the English trade is applicable with almost equal force to the Canadian trade, particularly with Manitoba, and may be extended eventually to Australia.

PEARS.

The result of the Grimsby cold storage experiment was most favorable as to pears. The results indicate that an enormous increase can be made in our present exports of this fruit. It has been shown that our best pears can be carried to England with perfect success, and good prices realized. England in 1898 imported pears from all sources to the value of £221,779, of which the whole of Canada received only £8,080. It is believed that the quantity of pears grown in Ontario can eventually be enormously increased for the English market and the Northwest. And while England's total imports of pears do not amount at present to a great sum, yet it is believed that this can be much increased.

PEACHES.

Ontario peaches, in a number of instances, have been successfully placed on the English market by the Grimsby shippers, but the average shipment has proven far from successful. The results have shown from 15s. per case down to a total loss. If, however, it can be discovered that the difficulty lies with the steamship companies, and the lack of proper refrigeration, this fruit can be placed on the English market with much profit to Ontario fruit growers.

TOMATOES.

Tomatoes, which were fairly successful the first year, were unprofitable the second, and this year the Government has not shipped at all from Grimsby. The cause of the difficulty in this case was probably due to the varieties shipped, a smaller and harder variety being needed. Those shipped the first year were hard, but too large; those shipped the second were smaller, but too tender.

It is believed, however, that this fruit can eventually be placed on the English market when a little more experience is had; particularly if, as with peaches, there has been any neglect on the part of the steamship companies.

GRAPES.

The quality of Ontario grapes is so very distinct from that of the Spanish and French grapes to which the English people are accustomed that the sales of the Dominion Government have not been encouraging. The Fruit Growers' Association favors the policy of forcing this fruit on the English market, in the hope of "educating" the English taste. Our grapes are almost a distinct and new fruit to the English, but it is believed their use can be greatly encouraged in England, although up to the present they have not been received with favor.

The North-West and British Columbia will always afford a market for this fruit.

QUINCES.

This fruit has been placed on the English market by the Dominion Government with but indifferent success, although hopes are entertained that it may be eventually exported with profit.

OTHER FRUITS.

Efforts to place plums on the English market have not been successful owing to their poor keeping qualities. Strawberries, raspberries and currants are too tender for export except as pulp.

PRICES REALIZED.

The best prices realized on fruit shipped from Grimsby in 1897 were stated by Prof. Robertson as follows:—

"The pears sold from 15s. a case downward. Those sold at 15s. a case realized at Grimsby \$2.78, counting every expense. Those that realized 8s. 3d. a case netted \$1.24. Then tomatoes realized all the way from 5s. 2d.—57c. at Grimsby—down to 31c.

at Grimsby. Then there were a few lots which were practically given away altogether. Then of the shipments that went to London—and these I quote from the very highest prices that were realized—peaches were sold at 15s 4d. a case, realizing at Grimsby \$2.84 a case after all expenses were off. Peaches were sold at 12s., realizing \$2.04 at Grimsby, and these were not landed in the very best condition, that is, in as good a condition as I am quite confident we could land them in with the experience we have gained in regard to a lot of little things. Pears were sold at 16s., realizing \$2.95; at 14s., realizing \$2.49, and 12s., realizing \$2.04. The highest price realized for Bartletts was 12s., and for the Louise Bonne, 16s. and 14s.—higher than the Bartletts. I find also that the Kieffer pears in one case were sold for 11s., and the Buerre d'Anjou for 15s. in Glasgow—both prices being higher than the Bartletts; I think the main reason for that being they landed in better condition—perhaps a kind of pear that would not injure so quickly. Tomatoes realized 9s. 4d., realizing \$1.43 at Grimsby.

“Large size tomatoes sold for 6s. 8d., netting 62c, against \$1.43 at Grimsby, and that occurred twice over, with the statement back from the consignees each time, ‘Large sized tomatoes do not sell well in our market, even in the best condition’ Then grapes sold in London at 4s., netting 22c, down to 10c., and down to less than nothing, but the last shipment bringing back a better report from the retailers who got the grapes. We did not sell many plums altogether, but they sold at 15s. 6d., realizing \$2.83 at Grimsby. The apples we sold at 8s. 3d., realizing \$1.18. These were among the best prices that we got for the fruit that landed in reasonably good condition, but I am confident, from what I saw of the work this year on the steamships and at the warehouses at Montreal, and on the railway cars and back to the starting point, that the fruit this year didn't land in England in as good a condition as the same fruit can be sent next year, if we merely carry out with fair judgment what we have learned this past year.”

BURLINGTON FRUIT GROWERS.

The fruit growers of Burlington have experimented to a slight extent with the English market, the results being such as to confirm those of the Grimsby growers, and are very encouraging, although the need of a cold store at Burlington was greatly felt, as shipments of any consequence cannot be made without it.

A PRIVATE COLD STORE AT GRIMSBY.

So essential is a cold store to successful results with the fruit trade, that Mr. E. D. Smith, of Grimsby, a prominent grower, erected a private store for his personal use during the past summer. Mr. Smith in the course of a conversation stated that this building has capacity for about six carloads of fruit. The building is of brick—double brick walls with wooden walls, paper and air spaces between. There are ten thicknesses of brick, timber and paper. The floor and ceiling are six thicknesses of timber, with paper and three air spaces in addition. The cost of the cold store was \$2,000; and of the frame ice house, distant about 75 feet, \$500. There are four rooms in the store, which cost, so Mr. Smith estimates, \$1.50 each per day. He uses about two tons of ice daily. But the quantity varies according to the temperature of the fruit. After it has been in the store for some time, and is well chilled, less ice is required. The system of refrigeration is the same as with the Government store at Grimsby.

Mr. Smith's object in building the store was, in the first instance, to merely chill the fruit before placing it in refrigerator cars. When the fruit is placed warm in the car, the refrigeration obtained in the cars is not at all so effective in preserving the fruit. It requires a large quantity of ice to cool the fruit in the first instance, but when that is done, it is not difficult to maintain it at that temperature on the cars.

THE DOMINION GOVERNMENT'S COLD STORE.

As to the future of the cold store at Grimsby, there is nothing decided. The third season has elapsed and it is probable it will be taken over from the Government and used by the local growers. Owing to the fact that it was intended for developing the foreign trade by the Dominion Government, it has not been used heretofore for

local market purposes, so that no estimate of its value in the latter respect can be formed. Its cost would be much less than that erected by Mr. Smith.

GENERAL FARMING.

While special attention has been paid in this article to cold storage in reference to fruit growing it is not that cold storage is of less value to more general farming, but for the reason that experiments have been more fully made in that branch of agriculture. The general farmer, in addition to the fruits he grows, and which it would be of great advantage to place in cold storage if only to tide over the glutted condition of the local market, has, chief among his other tender products, eggs, poultry and butter,

The farmer has been, to a considerable extent, criticized for his neglect to improve the quality of his poultry, his apples and other fruits, by those who know the possibilities of the trade in these products. The same criticism was in order as to dairy stock before the development of cheese factories and creameries. At that time scrub stock was the rule. No particular breeds were recognized, whether for cheese, butter or beef. All were merely "cattle," and the Ontario farmer knew them as nothing else. If one gave a large supply of milk and another a small supply it was merely an accident and there was no remedy. One cow gave a large amount of cream and another very little. For this, too, there was no remedy. The same was, in the main, true regarding beef. The animals, although of an inferior grade, consumed as much fodder as does the high-grade stock of to-day, but they did not produce, by any means, so much in return, and the farmers now, in the light of advanced methods, see that they were formerly keeping cattle that were almost useless—that merely "ate their heads off." But the development of the market has worked a revolution in this matter, and the Ontario dairy farm of to-day has high grade stock, of good strains, adapted to each special purpose.

With regard to poultry, the farmer does not as yet think of improving his stock, whether for the table or the production of eggs. While it is only by paying attention to high grade stock with regard to poultry, that a good market can be secured, yet it is only by providing a means of reaching this market that the farmer will be induced to cater to it. Until this is done he will, as now, allow his fowls to fatten, starve or freeze, produce eggs or not, as the circumstances of the barnyard afford. When once the market is rightly developed, the poultry of the farmyard should be high-grade, and one of the most remunerative branches of farming.

The apple crop of the present, is entirely in the hands of a few buyers, who send their packers into the farmer's orchard. It is not an uncommon thing to see, out of a good year's crop, one-half left on the ground by the buyers. They can ship and obtain a good market for the best only.

While this is true, and while it is desirable that only the best be placed on the English market, yet it is essential that the farmer should learn more of his fruit, should know why so much is rejected by the buyer, how the difficulty can be removed and a more suitable grade and better qualities produced. Such a market as has been offered, has induced many to pay more attention to this crop by spraying, pruning and grafting. Yet there remains much to be done by cold storage in improving the market, and when this is done, the farmer will redouble his efforts to raise the standard of his produce.

At present the apple crop costs him little labor, he plants the trees and they take care of themselves, and he is apt to value the crop accordingly. Buyers are few, there is no competition, and he sells his fruit to the first comer for whatever is offered. For the large amount rejected by the buyer he has no market, and they are allowed to rot on the ground unless the pigs can be induced to eat them. The buyer makes his own conditions, selects the choicest fruit; this is bought at a low, and sold at a comparatively high figure, and his profits are undoubtedly greater than they will be after the crop is taken in hand by the farmers, and disposed of in the right way for its true value. Unquestionably, under present methods, the middleman receives the profit, which under proper conditions should belong to the producer. At the present time, while Canada supplies about 60 per cent. of England's cheese imports, we have only about 40 per cent. of the apple imports, a condition which cold storage would materially improve. Many of our apples now reach England in a very bad state, and the price received is correspondingly low. There is an opportunity for both improving the quality we export and largely increasing the quantity.

EGGS.

The egg market regularly turns from a glutted condition in the summer months to one of extreme scarcity in winter, with corresponding low and high prices. By means of lime water cold storage, or even dry cold storage, eggs can be readily preserved. Fresh laid eggs, in cold storage at a temperature of about 34° Fahr. with a sweet, pure atmosphere, suffer very little deterioration in quality.

This trade offers, in the British market, the greatest opportunities for extension. In 1898, England imported from all sources, eggs to the value of £4,457,117. Of this, only £251,710 is credited to the whole of Canada. The climate of Ontario is excellent for egg production, and the amount which could be sent to England could be greatly increased. The quantity consumed at home, too, may be largely supplemented, and the market is one which will constantly expand. The colder sections of Canada, not so favorable to egg production, will furnish a continuously increasing market. The chief requisite for fully developing this market both in Canada and England is the facility for placing the eggs in immediate cold storage.

Not only would the quantity consumed be largely increased in winter, but the quality of eggs supplied can be much improved. For French, Danish and Italian eggs as now placed on the English market, a much higher price is paid by the critical English. A series of quotations in 1896 show French eggs ranging from 24 to 34 cents per dozen; while Canadian eggs brought from 17 to 22 cents. This is a matter which only cold storage can improve.

POULTRY.

The following table of England's imports is indicative of the possible expansion of of trade in this product :—

	From all sources	From Canada.
1894.....	£480,884	£ 290
1895.....	605,160	530
1896.....	705,478	6268
1897.....	730,725	8398
1898.....	637,492	12699

The trade in turkeys is one which can, in particular, be developed. In addition to turkeys, however, the Ontario farmers can raise an unlimited number of chickens, ducks and geese, and dispose of them on the English market at a good profit. Not only can we obtain a much greater percentage of present imports, but the English consumption can be greatly increased, as indicated by the foregoing table.

In order to transport this farm product to England, however, it is essential that it be chilled through and through, not frozen, before being packed in cases for shipment. This can only be accomplished by cold storage, such as a system of collecting stations can supply.

In addition to the English market, the northern portions of Canada will demand a constantly increasing supply, while the present trade would be vastly improved by storage to enable the farmer to tide over glutted markets, which occur so frequently here in the fall months.

Collecting stations would enable the farming community to develop the poultry and egg trade among themselves, and conduct their own shipments as is, and promises to be more and more the case with fruit growers.

There appears to be no reason, when properly developed, that the export of eggs and poultry should not be among our valuable industries.

BUTTER.

It is estimated that the amount of dairy butter made in Ontario annually is 50,000,000 pounds, and of creamery butter, about 5,000,000 pounds.

It is absolutely necessary, in order to retain the English market, that the quality of butter offered there be uniform. For that reason it is very much to be desired that only creamery butter be exported. In consequence the dairy butter, produced by the general farmer, must remain for home consumption.

Butter can be kept in cold storage indefinitely, but if exposed to too high a temperature, fermentation quickly begins. It should be placed, within a week after being made, in a temperature of 34 degrees Fahr. or less, in order to insure its preservation.

In this case the value of cold storage to the general farmer would be very great in tiding over glutted markets. High prices exist in winter but the quantity of butter is small, and but few participate. High prices in winter do not compensate the great mass of farmers for the very low prices which prevail during the summer season. Cold storage would enable the farmer to dispose of his butter in accordance with the demand, and the price would remain more constant, to the benefit of the producer and consumer.

ERECTION AND CONTROL.

These collecting stations should be situated at railway stations, and located so as to serve a township, or group of townships, or other section.

They could be erected under the following plans—

1. By the township council upon its own initiative, by a two-thirds majority.
2. By the township council upon the petition of a majority of the ratepayers representing one half the assessed value of the municipality.
3. By a group of townships, or section composed of parts of several townships, under a Board of Commissioners appointed by the councils interested, the cost to be paid in proportion to the assessed value of the several parts of the townships.
4. By a joint stock company based upon an agreement with the township council, as to location, service and storage rates.

There are several systems under which cold stores could be managed, but one that appears most practicable would be that whereby each had its storekeeper and salesman who would receive and dispose of the produce delivered on much the same plan as cheese factories have been operated. The salesman might be given full power to dispose of the stuffs at his discretion, or he might be restricted by the instructions of individual patrons as they deposited their produce with him.

As to the class of man required to fill the position of salesman and storekeeper this will be largely a matter of detail dependent upon the character and amount of business to be transacted. In many cases, no doubt, only one or two days in the week, especially at certain seasons, would be set aside for receiving produce, and the attendant could be a man in the immediate vicinity whose whole time would not be required.

THE COLLECTING STATION.

The cost of such collecting stations would range from \$1,500 to \$2,500 each, according to capacity, and the cost of operation would be from \$3 to \$6 daily in hot weather, and much less in cold. These figures are merely approximate and would vary greatly according to location, equipment and the produce stored.

The refrigerating equipment estimated upon is that employed at Grimsby by the Dominion Government cold store, and by E. D. Smith, whose cold store has been referred to. This consists of a wall of cylinders between two storage compartments; which cylinders are kept full of a mixture of ice and salt, placed in them from an upper floor, the cylinders being about one foot in diameter each.

The interior equipment would necessarily vary slightly according to the kind of produce to be stored, but is a detail of no difficulty. Fruit is stored in baskets, or cases placed one above the other. Eggs are stored dry in cases, or in lime water. Poultry may be arranged in various ways, as is also the case with butter. It is necessary, however, that fruit and butter in particular should have compartments wholly free from odor or taint of any description, so that separate compartments are needed for certain products. It is usual in any case to divide the storage capacity into compartments.

The cost of operation should be met by a charge on all articles stored, in accordance with a schedule prepared by the municipal council.

GOVERNMENT ASSISTANCE.

There is urgent need to complete the chain of transportation by equipping it with stations for collecting and storing the different products until sufficient quantities are held

for shipping in bulk. This last step of providing such collecting stations is the last link to be forged in the complete chain, and this link must be provided before the expenditure which we have already made will prove to the fullest extent a profitable investment, or before we can expect these implements to return us the results for which they were designed.

In the march of progress, the Canadian farmers have kept abreast of the times, and have ever been wakeful to their own interests, adopting every invention which has been proven to them, beneficial in any of the various branches of their business, and in the completing of this system of cold storage in collection and transportation, possibly [as great benefit will be realized as from any step which has been taken in the past.

At first sight it might appear as if the cost of making this provision would not be warranted when the true loss occasioned to the individual farmer only is known. The individual loss may appear a trifle compared with the expenditure to be made in each section in providing such collection stations, but we must not forget that this total expenditure is made in bulk, while the loss to the individual farmer is an annual affair, and to draw a correct comparison an aggregate of the annual loss in the section, and a computation of the total loss for a period of years, should be made.

The prime object of this step is not alone to save to the farmer and to the country the loss resulting from the present want of such means, but it is to obtain, as well, the enormous benefits which will result to the people from the encouragement given them to produce in much greater quantities, by providing for the safe keeping and disposition of these products.

Possibly one of the greatest obstacles in the way of providing these buildings at the present time is the difficulty encountered in securing the necessary funds. But, as with every other undertaking that is shown to be in the interests of the country generally, assistance has been granted by the Provincial Government, so this is deserving of consideration.

For many years, in the western part of Ontario, the farmers were very much handicapped for the want of means to provide proper drainage for their lands. Immense sections remained wet until the season for sowing had grown too late, and at other times when the spring was favorable the heavy rains of May and June would destroy the crops. So extensive and costly were the drains required to relieve these lands that individual effort proved useless. The Government, realizing that united action was necessary, laid down in the statutes a plan whereby this work, on an efficient scale, could be undertaken, and the necessary funds provided. Provision was made for extending the return of the money over a long term of years, making the annual payment small, and leaving the taxpayer to realize the benefit from the expenditure before payment was required. This resulted in reclaiming thousands of acres of the most productive soil in the Province, and removing, in addition, an immense area from periodical loss from frost and flood. This also created outlets for the thorough drainage of other lands, thus providing for their fullest and most profitable cultivation.

Again, the peculiar nature of some soils, the changeableness or uncertainty of the seasons, rendered it necessary to underdrain even the high lands. To undertake this work on an extensive scale was something for which the average farmer could not make immediate provision, and consequently the work was being slowly and imperfectly performed. In this the Government provided for loaning to the farmer, at the lowest possible rate of interest, the funds necessary for perfectly underdraining his land, of which he immediately realized the full benefit, being given, as in the other instance, a long term for repayment. By these means, the value of farm lands in the Province was advanced several millions of dollars.

The excellence of these plans, and the credit due the Government, do not lie in the amount of money subscribed by the Government to this work—which amount was but nominal. Better than this, it arose from the fact that the people were placed in a position to carry out the work themselves. The most valuable assistance which the Government could give in the matter of cold storage would not be so much the granting of money as the placing in the hands of the people, methods and power to institute and operate such collecting stations.

To create an interest and rivalry in producing the best specimens of farm produce, and to encourage this by their exhibition, the Government appropriates funds for the

holding of township, district and county fairs; for providing libraries and educational institutions, and in the administration of justice, assistance is also granted, so that there is every reason to believe that, when the merits of cold storage are recognized, assistance should be obtainable.

Government assistance and influence have been extended in a great many instances, in assisting farming and other industries, especially in establishing new lines of production and methods. Such assistance becomes essential in cases where general action is needed to insure success; in cases where individual and scattered effort would be either futile or greatly impeded. In this connection may be mentioned as other examples, the establishment of creameries, cheese factories, and the extermination of the San José scale, in all of which united effort was greatly to be desired so as to realize the full benefits. A system of cold storage collecting stations is among this class. In order that the full benefits of the new lines of trade may be realized, and the new methods of transportation fully equipped, there is need of united action, and any assistance which the Government can consistently offer.

The condition of cold storage with regard to transportation proper is now such that it can with safety be left to regulate itself. It has been proven, by the experiments of the Dominion Government to be a success. Private companies deem it sufficiently so to offer a safe and remunerative field for investment, to establish cold storage warehouses. It now remains for the fuller development of the opportunity thus afforded, to establish cold storage collecting stations wherever needed, and the increase of produce handled in this way will of itself compel the transportation companies to make every additional provision required for its accommodation.

EDUCATION NECESSARY.

There can be little doubt as to the benefit and practicability of a system of cold storage collecting stations established upon the lines indicated. It would be of advantage to place the subject prominently before Farmers' Institutes and all associations interested. By means of a thorough discussion of the question in farmers' conventions much practical and valuable information would be obtained, on which to more successfully base the details of the system in a manner that would meet with general approval and acceptance.

PARLIAMENT BUILDINGS,

TORONTO, ONTARIO, October 31st, 1899.
